

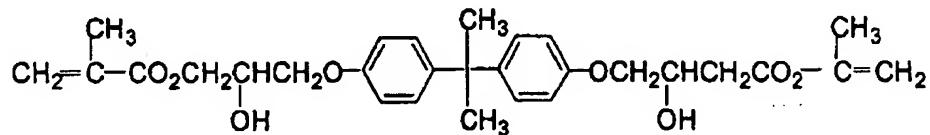
WHAT IS CLAIMED IS:

1. Light-curing dental adhesive compositions, which show improved physical and mechanical properties, and adhesive performance, comprising:

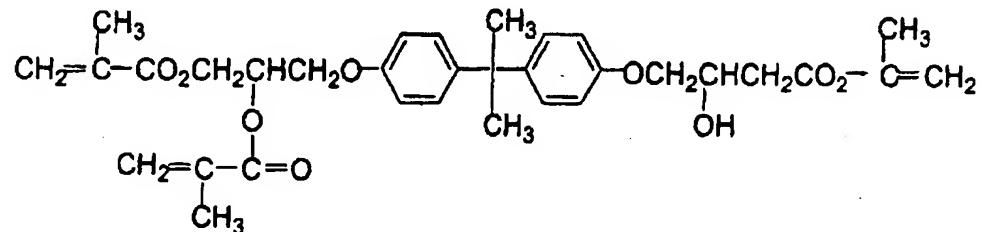
- (a) 1 to 50 wt% of the prepolymer mixture selected from a group consisting of a mixture of 2,2-bis-(4-(2-hydroxy-3-methacryloyloxypropoxy)phenyl)propane (Bis-GMA) of formula 1 with trifunctional methacrylate (Tri-GMA) of formula 2, a mixture of Bis-GMA with tetrafunctional methacrylate (Tetra-GMA) of formula 3 and a mixture of Bis-GMA, Tri-GMA and Tetra-GMA,
- (b) 1 to 40 wt% of an adhesive monomer;
- (c) 1 to 10 wt% of a hydrophilic monomer;
- (d) 0.1 to 10 wt% of a photoinitiation system; and
- (e) 10 to 60 wt% of a diluent,

wherein the wt% of all the components are based on the total weight of the composition;

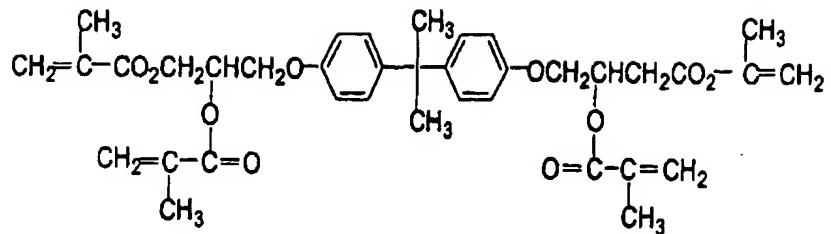
[Formula 1]



[Formula 2]



[Formula 3]



2. The Light-curing dental adhesive compositions according to Claim 1, wherein the prepolymer mixture is the mixture of 95 to 5 wt% of Bis-GMA with 5 to 95 wt% of Tri-GMA based on the weight of the prepolymer mixture.

3. The Light-curing dental adhesive compositions according to Claim 1, wherein the prepolymer mixture is the mixture of 95 to 5 wt% of Bis-GMA with 5 to 95 wt% of Tetra-GMA based on the weight of the prepolymer mixture.

4. The Light-curing dental adhesive compositions according to Claim 1, wherein the prepolymer mixture is the mixture of 90 to 5 wt% of Bis-GMA with 90 to 5 wt% of Tri-GMA and 90 to 5 wt% of Tetra-GMA based on the weight of the prepolymer mixture.

5. The Light-curing dental adhesive compositions according to Claim 1, wherein the adhesive monomer is selected from a group consisting of (meth)acrylic acid, maleic acid, p-vinylbenzoic acid, 11-(meth)acryloxy-1,1-undecandicarboxylic acid, 1,4-di(meth)acryloyloxyethylpyromellitic acid, 6-(meth)acryloyloxyethyl naphthalene-1,2,6-tricarboxylic acid, 4-(meth)acryloyloxymethyltrimellitic acid and its anhydride,

4-(meth)acryloxyethyltrimellitic acid and its anhydride, 4-(meth)acryloxybutyltrimellitic acid and its anhydride, 4-[2-hydroxy-3-(meth)acryloyloxy]butyltrimellitic acid and its anhydride, 2,3-bis(3,4-dicarboxybenzoyloxy)propyl(meth)acrylate, 2-, 3- or 4-(meth)acryloyloxybenzoic acid, N-O-di(meth)acryloyloxytyrosine, O-(meth)acryloyloxytyrosine, N-(meth)acryloyloxytyrosine, N-(meth)acryloyloxyphenylalanine, N-(meth)acryloyl-p-aminobenzoic acid, N-(meth)acryloyl-O-aminobenzoic acid, an addition product of glycidyl(meth)acrylate with N-phenylglycine or N-tolylglycine, 4-[(2-hydroxy-3-(meth)acryloyloxypropyl)amino]phthalic acid, 3- or 4-[N-methyl-N-(2-hydroxy-3-(meth)acryloyloxy)amino]phthalic acid, (meth)acryloylamino salicylic acid, (meth)acryloyloxy salicylic acid, (meth)acrylate of 3,3,4,4'-benzophenone tetracarboxylic dianhydride (BTDA) or 3,3,4,4-diphenyltetracarboxylic dianhydride, 2-(3,4-dicarboxyl benzoyloxy) 1,3-di(meth)acryloyloxypropane, 2-(meth)acryloyloxyethyl phosphate, 2- and 3-(meth)acryloyloxypropyl phosphate, 4-(meth)acryloyloxybutyl phosphate, 6-(meth)acryloyloxyhexyl phosphate, 8-(meth)acryloyloxyoctyl phosphate, 10-(meth)acryloyloxydecyl phosphate, 12-(meth)acryloyloxydodecyl phosphate, bis[2-(meth)acryloyloxyethyl] phosphate, bis[2-(meth)acryloyloxyethylphenyl] phosphate, bis[2-(methyl)acryloyloxyethyl p-methoxyphenyl] phosphate, 2-sulfoethyl(meth)acrylate, 2- or 1-sulfo-1 or 2-propyl(meth)acrylate, 1- or 3-sulfo-2-butyl(meth)acrylate, 3-bromo-2-sulfo-2-propyl(meth)acrylate, 3-methoxy-1-sulfo-2-propyl(meth)acrylate, 1,1-dimethyl-2-sulfoethyl(meth)acrylamide propanesulfonic acid and 2-methyl-2-(methyl)acrylamide propane sulfonic acid and a mixture thereof.

6. The Light-curing dental adhesive compositions according to Claim 1, wherein the hydrophilic monomer is selected from a group consisting of hydroxyethyl methacrylate, hydroxypropyl methacrylate and a mixture thereof.
7. The Light-curing dental adhesive compositions according to Claim 1, wherein the photoinitiation system comprises 0.05 to 5 wt% of a photoinitiator and 0.05 to 5 wt% of a reductant, the photoinitiator is camphorquinone and the reductant is N,N-dimethylaminoethyl methacrylate or ethyl p-dimethyl aminobenzoate.
8. The Light-curing dental adhesive compositions according to Claim 1, wherein the diluent is selected from a group consisting of ethyl alcohol, acetone and water.